UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/788,152	02/16/2001	Roy Emek	6727/01307US0	4283

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EXAMINER
HIRL, JOSEPH P

ART UNIT	PAPER NUMBER
2129	

DATE MAILED: 08/12/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

	Application No.	Applicant(s)
Office Action Summary	09/788,152	EMEK ET AL.
	Examiner	**Art Unit**	
	Joseph P. Hirl	2129	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>31 May 2005</u>.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) <u>66-118</u> is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) <u>66-118</u> is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on <u>16 February 2001</u> is/are: a)☒ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All   b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☐ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date <u>A1</u>.

4)☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5)☐ Notice of Informal Patent Application (PTO-152)

6)☐ Other: _____ .

DETAILED ACTION

1.   This Office Action is in response to an AMENDMENT entered May 31, 2005

for the patent application 09/788,152 filed on February 16, 2001.

2.   All prior office actions are fully incorporated into this office action by reference.

Claim Rejections - 35 USC § 102

3.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that

form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4.   Claims 66-118 rejected under 35 U.S.C. 102(b) as being anticipated by

Mackworth (Consistency in Networks of Relations, Artificial Intelligence, 1977, referred

to as **Mackworth**).

Claims 66, 92, 118

        Mackworth anticipates receiving a set of variables having respective input

domains and a set of constraints comprising one or more relations defined as a

combination of operators, the combination comprising at least one operator selected

from a group of arithmetic and bitwise operators, which are applied to the variables

(**Mackworth**, p 104, l 2-18; Examiner's Note (EN): a Boolean procedure would

represent bitwise operations); building a network of one or more hyper-arcs

representing the set of constraints, each hyper-arc corresponding to one of the relations

expressed in terms of the operators and linking nodes in the network corresponding to

the variables to which the operators are applied (**Mackworth**, p 104, l 2-6; EN: see

specification @ p2, l 17-28 for network terminology); and reducing the input domains of

the variables in the network responsive to the operators, so as to determine respective

output domains of the variables that are consistent with the set of constraints

(**Mackworth**, p 104, l 8-18).

Claims 67, 93

Mackworth anticipates receiving the set of constraints comprises providing a

language for specifying the constraints, the language having grammatical rules, and

specifying the constraints using the language (**Mackworth**, p 104, l 8-18; EN: the

language is a computer language which has structural or grammatical rules; computer

implemented processes operate automatically).

Claims 68, 94

Mackworth anticipates reducing the input domains comprises finding projections

of the operators onto the domains of the variables (**Mackworth**, p 104, l 8-18; EN: such

are the related operators).

Claims 69, 95

Mackworth anticipates receiving variable and at least one input variable for each

of the operators, and wherein finding the projections comprises projecting the domain of

the at least one input variable of each of the operators onto the domain of the output

variable thereof, and projecting the domain of the output variable of each of the

operators onto the domain of the at least one input variable thereof (**Mackworth**, p 104,

I 8-18; EN: such is a DO LOOP).

Claims 70, 96

Mackworth anticipates the operators comprise multi-variable operators, which

receive two of more of the variables as their inputs (**Mackworth**, p 104, I 8-18; EN: such

as x and y).

Claims 71, 97

Mackworth anticipates the multi-variable operators comprise one or more

operators selected from a group consisting of arithmetic addition, arithmetic subtraction,

arithmetic multiplication, arithmetic division and modulo operators (**Mackworth**, p 104, I

8-18; EN: para 9. applies; a DO LOOP operating on multi-variables functions on

arithmetic addition).

Claims 72, 98

Mackworth anticipates the multi-variable operators comprise one or more

operators selected from a group consisting of an operator testing arithmetic equality of

two of the variables, an operator testing arithmetic inequality of two of the variables, and

an operator testing whether one of the variables is greater than another of the variables

(**Mackworth**, p 104, I 8-18; EN: para 9. applies; a DO LOOP tests equality of the current

loop iteration to that of the nth iteration).

Claims 73, 99

Mackworth anticipates the multi-variable operators comprise one or more

operators selected from a group consisting of a bitwise "and," bitwise "or" and bitwise

"exclusive or" operations (**Mackworth**, p 104, I 8-18; EN: the implementation of "y ε Di"

is equivalent to a bitwise "and" operation).

Claims 74, 100

Mackworth anticipates the combination of operators further comprises at least

one logical operator (**Mackworth**, p 104, I 8-18).

Claims 75, 101

Mackworth anticipates the at least one logical operator comprises at least one of

a disjunction operator, a negation operator, and an implication operator (**Mackworth**, p

104, I 8-18; EN: such is "no y ε Di").

Claims 76, 102

Mackworth anticipates reducing the input domains comprises, for each of the

hyper-arcs, assembling the variables in a hierarchy based on the relation corresponding

to the hyper-arc, and reducing the input domains of the variables in the hierarchy

(**Mackworth**, p 104, I 2-18).

Claims 77, 103

Mackworth anticipates assembling the variables comprises arranging the

variables in a hierarchical graph, having vertices corresponding to the variables

(**Mackworth**, P 101, Fig. 1; p 104, I 2-6; EN: graphs have nodes and linkages and are

axiomatically hierarchical).

Claims 78, 104

Mackworth anticipates arranging the variables in the hierarchical graph

comprises arranging the graph so as to have the form of one or more trees

(**Mackworth**, P 101, Fig. 1; p 102, l 6-8).

Claims 79, 105

Mackworth anticipates reducing the input domains comprises reducing the input

domains over each of the trees so as to find respective interim domains of the variables

that are consistent with the relation over each of the trees, and combining the interim

domains over all of the trees to determine the output domains (**Mackworth**, p 105, l 16-

25; p 114, l 32).

Claims 80, 106

Mackworth anticipates arranging the variables in the graph comprises inserting

vertices in the graph corresponding to the operators, connecting the vertices

corresponding to the variables (**Mackworth**, p 101, l 6-13).

Claims 81, 107

Mackworth anticipates building the network of the hyper-arcs comprises

representing the set of relations as a disjunction of multiple relations, with one of the

hyper-arcs corresponding respectively to each of the relations (**Mackworth**, p 101, l 6-

13; p 101, Fig. 1), and wherein determining the respective output domains comprises

determining interim domains of the variables for each of the hyper-arcs, and taking a

union of the interim domains for each of the variables to determine the output domains

(**Mackworth**, p 101, l 14-22).

Claims 82, 108

Mackworth anticipates reducing the input domains comprises determining the output domains such that for any given value in the respective output domain of each of the variables, there exist values of the other variables in the respective output domains thereof that, together with the given value, constitute a solution to the set of relations (**Mackworth**, p 104, l 2-18).

Claims 83, 109

Mackworth anticipates reducing the input domains comprises determining the output domains such that every set of values of the variables in the input domains that constitutes a solution to the set of relations is contained in the output domains of the variables (**Mackworth**, p 104, l 2-18).

Claims 84, 111

Mackworth anticipates receiving the set of variables comprises receiving variables that are characteristic of inputs to a system under test, and wherein reducing the input domains comprises determining values of the inputs to be made to the system based on the output domains of the variables (**Mackworth**, p 104, l 2-18).

Claims 85, 112

Mackworth anticipates the system comprises an electronic processor, and wherein determining the values of the inputs comprises determining commands and addresses to be input to the processor (**Mackworth**, p 104, l 2-18; such is related to the Boolean procedure).

Claims 86, 113

Mackworth anticipates receiving the set of variables comprises receiving control

parameters of a mechanical system, and wherein reducing the input domains comprises

generating a command to control the system based on the output domains of the

parameters (**Mackworth**, p 117, l 6-9; p 104, l 2-18; EN: Mackworth describes

algorithms that function independent of a specific application; the control parameters of

a mechanical system are not novel to the solution concepts of Mackworth).

Claims 87, 114

Mackworth anticipates receiving the set of variables comprises receiving features

of an image containing visual information, and wherein reducing the input domains

comprises identifying an object in the image based on the features (**Mackworth**, p 117,

l 6-9; p 104, l 2-18; EN: Mackworth describes algorithms that function independent of a

specific application; the features of an image are not novel to the solution concepts of

Mackworth).

Claims 88, 115

Mackworth anticipates receiving the set of variables comprises receiving a

natural language input, and wherein reducing the input comprises parsing the natural

language, responsive to the output domains, so as to interpret the language

(**Mackworth**, p 117, l 6-9; p 104, l 2-18; EN: Mackworth describes algorithms that

function independent of a specific application; the features of a natural language to

include parsing or segmentation are not novel to the solution concepts of Mackworth).

Claims 89, 116

Mackworth anticipates receiving the set of variables comprises receiving characteristics of a condition, and wherein reducing the input domains comprises determining a diagnosis of the condition based on the output domains (**Mackworth**, p 117, l 6-9; p 104, l 2-18; EN: such is a control application with feedback; the features of a control problem are not novel to the solution concepts of Mackworth).

Claims 90, 117

Mackworth anticipates receiving the set of variables comprises receiving characteristics of resources whose use is to be scheduled, and wherein reducing the input domains comprises scheduling the use of the resources subject to the set of relations (**Mackworth**, p 117, l 6-9; p 104, l 2-18; EN: Mackworth describes algorithms that function independent of a specific application; scheduling features are common to all problems and merely convey the need to sort for input such features; applicant has provided nothing to indicate a uniqueness in a specific application).

Claims 91, 110

Mackworth anticipates at least one of the constraints comprises a relation among at least three of the variables (**Mackworth**, P 101, Fig. 1).

Response to Arguments

5.   Applicant's arguments filed on May 31, 2005 related to Claims 66-118 have been

fully considered but are not persuasive.

In reference to Applicant's argument:

Claim 66 is similar to claim 24 as originally filed in this application, except that claim 24 recited a combination of operators including at least one operator selected from a group of arithmetic, bitwise and logical operators. In response to the previous Official Action in this case, Applicant pointed out that Mackworth neither teaches nor suggests- a relation -between variables defined as -.such a combination of operators. In the most recent Advisory Action, the Examiner stated (presumably in reference to claim 24), "Boolean procedures and operators are axiomatically linked. Simple logical operators are acceptable." Although the Examiner did not explain this statement any further, Applicant took it to indicate that if logical operators were deleted from the combination recited in claim 24, the claim would then distinguish over Mackworth.

Examiner's response:

        Para 9. applies. Applicant made the following statement in the response dated

April 21, 2005 @ page 16, I 14-19:

        In rejecting claim 24, the Examiner asserted that the use of constraints comprising one or more relations defined as a combination of operators is described by Mackworth on page 104, lines 2-18. as noted in applicant's response to the previous Office Action, the cited passage makes no mention or suggestion of a relation between variables defined as a combination of operators, nor is there any such suggestion elsewhere in Mackworth of defining a relation in this manner.

        In the Examiner's noted reference, Mackworth cites a Boolean procedure which

axiomatically anticipates the Applicant's combination of operators. The statement:

"Boolean procedures and operators are axiomatically linked. Simple logical operators

are acceptable." explains that such Boolean procedures indeed anticipate the

Applicant's combination of operators. Such is the way Boolean procedures are

constructed as a practitioner in the field of computer science will frequently exercise.

In reference to Applicant's argument:

Claim 66 has been framed accordingly. Although Mackworth refers to logical relations, he neither teaches nor suggests that a CSP might be defined in terms of a combination of operators including arithmetic or bitwise operators, which are plied to the CSP variables, as recited in claim 66.

Examiner's response:

Para 9. applies. Applicant does not set forth the limitation:

that a CSP might be defined in terms of a combination of operators including arithmetic or bitwise operators, which are applied to the CSP variables

in claim 66. If Applicant did cite the suggested limitations, the above discussion

applies. Further, bitwise operators are Boolean operators and combination of such

operators are found in Mackworth in general and specifically on page 104, lines 2-18.

Examination Considerations

6.   The claims and only the claims form the metes and bounds of the invention.

"Office personnel are to give the claims their broadest reasonable interpretation in light

of the supporting disclosure. *In re Morris,* 127 F.3d 1048, 1054-55, 44USPQ2d 1023,

1027-28 (Fed. Cir. 1997). Limitations appearing in the specification but not recited in

the claim are not read into the claim. *In re Prater,* 415 F.2d, 1393, 1404-05, 162 USPQ

541, 550-551 (CCPA 1969)" (MPEP p 2100-8, c 2, l 45-48; p 2100-9, c 1, l 1-4). The

Examiner has full latitude to interpret each claim in the broadest reasonable sense.

Examiner will reference prior art using terminology familiar to one of ordinary skill in the

art. Such an approach is broad in concept and can be either explicit or implicit in

meaning.

7.   Examiner's Notes are provided to assist the applicant to better understand the
nature of the prior art, application of such prior art and, as appropriate, to further
indicate other prior art that maybe applied in other office actions. Such comments are
entirely consistent with the intent and spirit of compact prosecution. However, and
unless otherwise stated, the Examiner's Notes are not prior art but a link to prior art that
one of ordinary skill in the art would find inherently appropriate.

8.   Unless otherwise annotated, Examiner's statements are to be interpreted in
reference to that of one of ordinary skill in the art. Statements made in reference to the
condition of the disclosure constitute, on the face of it, the basis and such would be
obvious to one of ordinary skill in the art, establishing thereby an inherent prima facie
statement.

9.   Examiner's Opinion: paras 6-8 apply. The Examiner has full latitude to interpret
each claim in the broadest reasonable sense.

Conclusion

10.   Claims 66-118 are rejected.

Correspondence Information

11.   Any inquiry concerning this information or related to the subject disclosure

should be directed to the Examiner, Joseph P. Hirl, whose telephone number is

(571) 272-3685. The Examiner can be reached on Monday – Thursday from

6:00 a.m. to 4:30 p.m.

If attempts to reach the Examiner by telephone are unsuccessful, the

Examiner's supervisor, Anthony Knight can be reached at (571) 272-3687.

Any response to this office action should be mailed to:

Commissioner of Patents and Trademarks,

Washington, D. C. 20231;

Hand delivered to:

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401 Dulany Street,

Alexandria, Virginia 22313,

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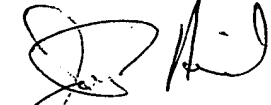
or faxed to:

(571) 273-8300 (for formal communications intended for entry.

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you have any questions on access to Private PAIR system, contact the Electronic

Business Center (EBC) at 866-217-9197 (toll free).

Joseph P. Hirl
Primary Examiner
July 19, 2005